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Dear Stan,

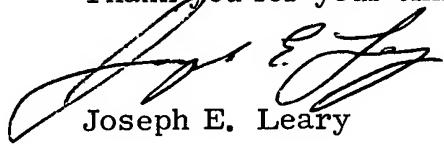
I was sorry you weren't able to make it to the Laguna Beach Arts Festival last summer. I was busy but ready to come down if you had made it.

I became co-publisher of this little paper last February and wrote the article on hydrogen fusion in the enclosed issue. If you have a chance to read it and respond, I would be very interested in your thoughts on the subject.

We are watching and waiting for the ideas that will help the U. S. break the apparent dependence on foreign oil. If you and/or the agency come across any and we can help spread the word, please let us know.

I hope we can connect sometime if you are in my area or I in yours.

Thank you for your time,



Joseph E. Leary



JEL:nk

Is fusion 50 years away?

It Ain't Necessarily So

"The significance of a successful demonstration of fusion would be very, very great. We would then know that there would be an unlimited energy supply, even if there were no practical reactor existing. Once one knows what directions to move, you can move very fast. The scientific basis for the Apollo project was established in the thirties, all that was required was the commitment. But you have to know, this country can marshal an industrial effort and run faster than any country in the world, if it knows what direction to run. The mathematics are still incomplete. You would need to demonstrate some

repel each other. To overcome this mutual repulsion, the fuel must be heated to about 100 million degrees Celsius (water boils at 100 degrees Celsius). Then to insure that there will be enough collisions of these nuclei, density and confinement time must be balanced. In other words, the more dense the fuel becomes, the less time it must be held that way, and vice versa. This ratio has produced two different directions from which scientists are approaching the problem.

The first approach is magnetic fusion. This was the first approach to be tried, has been going longer, receives more money, and

The official line seems to be that throwing more money at the fusion program will not speed it up.

gain, at least two or three, that should be enough to show the scientific basis..." The man speaking is Gerold Yonas, the head of Sandia Laboratories in Albuquerque, New Mexico, one of the leaders in the race to develop inertial confinement fusion.

There are two kinds of nuclear reactions, fission and fusion. A fission reaction splits heavy atoms into lighter ones. It is the kind of nuclear reaction used in the atomic bomb and in the atomic power plants that are so controversial right now. A fusion reaction combines or fuses two lighter atoms into a heavier one. It is the kind of nuclear reaction taking place in the sun. It is of interest because a fusion reactor would apparently have about 1% of the problems of a fission reactor:

- It is not self-sustaining, so there is no possibility of a meltdown. If there is any problem, you simply pull the plug and it stops.

- The only radioactive by-product of fusion is the reactor chamber itself. Most scientists feel that this problem can be solved by the time a reactor is actually built.

- The fuel, Deuterium, or heavy water, is available in virtually unlimited quantities in the ocean.

"Fusion is the ultimate energy resource," says Edwin Kintner, the head of magnetic fusion for the Department of Energy. "It is the last physical process anybody can point to for the large scale production of energy. What we are trying to do is bring solar energy down to earth and make it in large, concentrated quantities. Clean energy from an abundant supply of cheap fuel; a dream, you say? Well, the money to make this dream come true is currently coming from the Department of Energy.

The first successful man-made fusion reaction was the hydrogen bomb. The H-bomb, however, required an atomic bomb to create the conditions necessary for fusion. Researchers today are looking for a way to sustain those conditions to produce a controlled fusion reaction. The nuclei of the atoms they are trying to fuse have a positive charge and

appears to be closest to the magic "break-even." Break-even simply means as much power comes out as was put in to get the reaction going. The idea is to use huge magnets to compress the positively charged nuclei and hold them that way. Magnetic fusion goes for less density and a longer confinement time.

The second and newer approach is inertial confinement fusion. Using either a laser or a particle beam accelerator, scientists are taking a small pellet of fuel and hitting it with a short burst of tightly focused energy that causes the outer surface of the pellet to explode with such force that it produces both the necessary temperature and very high density inside the pellet. The density is so high that the inertia of the fuel itself keeps the high density long enough for the reaction to take place. Hence, inertial confinement fusion--more density and a shorter confinement time.

There are a few other approaches being suggested by various people. The best known and most controversial of these alternatives is a process using colliding beams that is the brainchild of Dr. Bogden Maglich.

By Joe Leary

Maglich is seen as an outsider in the fusion research community. His idea is to accelerate the fuel itself into a beam and then reflect the beam back onto itself and achieve fusion through the interaction of the two beams. He has been running his research on a shoestring because the panel of DOE experts that reviewed his idea does not feel that it will work. Although he is only asking for a couple of million dollars, the DOE has refused to give him any money at all.

Dr. Burt Richter at Stanford received a Nobel prize for his work with colliding beams. He points out that Maglich is proposing something well beyond the known technology of colliding beams and does not see how he (Maglich) is going to overcome some of the problems now existing with the rates at which beams will interact with each other. Dr. Richter's sentiments are pretty much the same as those of officials at the DOE. Nobody can see how Maglich's idea is going to work and nobody can categorically state that it will not work. Maglich feels that he is caught in a Catch-22: he can't get the money to demonstrate that it will work until he demonstrates that it will work.

The Electric Power Research Institute (EPRI) asked an advisory committee of three prominent people in fusion research to review Maglich's proposal last summer. In a letter dated Nov. 27, 1978 to EPRI, the committee said they did not see great potential for a fusion reactor but that the theoretical work Maglich was proposing to do and what he could learn about plasmas (gaseous charged particles) would be valuable. The committee concluded that this work (Maglich's proposal) is a well-defined package which is reasonable in scope, specific in goal, likely to be achievable, and an important adjunct to experimental programs. In light of the lack of high energy build-up studies in the U.S. and in view of the potentialities of this approach, it (the committee) recommends that

EPRI support the present proposal if DOE supports the associated experimental work." So Bogden Maglich still has to convince the DOE. It has been almost a year since the date of his proposal and he has not been successful as yet.

Meanwhile, the inertial confinement community has its eyes on a report that is about to be issued by the Foster committee. Foster is a vice-president of TRW in San Diego. His committee was asked to review the entire fusion program last year and turned in a report in June 1978. It was re-convenered in January of this year to review the inertial confinement program, and its report should be coming out about now. Sitting on the current committee are Foster, Ed Gerry, Burt Richter, Ray Polluck from Los Alamos, and Tim Coffey from the Naval Research Lab. The report is expected to document the promise and the problems of the research being done. According to Dr. Richter, "The committee feels that the promise is very high, but it's not proved."

The magnetic fusion program is probably the closest to net energy gain. Of the six labs working on magnetic confinement systems, Princeton is farthest ahead. Princeton is using the Tokamak, which the DOE says is "... (a Russian acronym for 'toroidal chamber with magnetic coils'), a circular, doughnut-shaped device. The magnetic lines twist around the doughnut, closing on themselves to confine the plasma. About 60% of the

all the conditions for a sustained-fusion reaction.

"As close as 1982 sounds, and in spite of what Gerold Yonas said about our ability to move rapidly once we know the direction, everyone still sees a practical fusion reactor being between 20 and 50 years away. Edwin Kintner sees that time as being part of the funding problem, ... the political process looks 2, 4, 6 years ahead, corporate processes look maybe 10 years ahead... we are trying to convince people to spend money for the benefit of the next generation."

The official line seems to be that throwing more money at the fusion program will not speed it up. But competition for funds is intense under the surface and one can't help wonder if the decision not to fund Bogden Maglich was influenced by that sense of competition. Although nobody interviewed wanted to openly criticize the DOE's funding decisions (it's bad politics to knock the agency you're depending on for money), there was frustration expressed privately about the priority, or lack of it, given to fusion research, and the apparent demand that each step be completed before the next one is started. While it is true that crash programs can become inefficient and wasteful, there is nothing to indicate that point is near at the current funding levels.

The percentage of its budget the DOE is spending on the entire fusion program (4.5% in '79 and 6% in '80) does not indicate a very high priority. Since the 1980 budget contains only a 1-1/2%

"What we are trying to do is bring solar energy down to earth."

U.S. magnetic fusion effort is in tokamaks. The principal tokamak experimental devices are at the Princeton Large Torus (PLT), the Alcator C at the Mass. Institute of Technology; and Doubt III at the General Atomics Co., in La Jolla.

The device expected to cross the break-even line first is the Tokamak Fusion Test Reactor (TFTR) being built at Princeton. It is scheduled to begin operation in 1982, and will cost about \$239 million. It is also "... expected to demonstrate the scientific feasibility of magnetic fusion by producing

increase (\$500 million in '79 to \$510 million in '80), there seems to be no inclination to revise priorities. Considering the economic havoc being wreaked by the current suppliers of energy and considering the prospect that fusion offers of breaking that stranglehold, one can't help wondering why the DOE is not heading in that direction at top speed.

As the expanding technology enables individuals to disconnect themselves from the energy supply system, shouldn't the bulk energy users, public and private, be investing in doing the same thing?

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A Semi-est Experience

by Wayne Goldstein

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Well, for years now I've pretty much shared the philosophy of this promo on the back of the est (Erhard Seminars Training) Graduate Review, and generally I avoid intense sympathetic encounters unless there is a high potential for entertainment value, but I, nevertheless attended an est guest seminar recently, hoping to discover more of what this phenomenal organization is all about without actually taking "the training."

Est, the eight year old brain-child of Werner Erhard, is officially classified as a non-profit educational corporation, and so far has offered, in exchange for less than the price of an average vacation in the Bahamas (current tuition is \$350), an experience that allegedly transforms the quality of life for nearly all the 190,000 individuals who have taken the 60-hour training. They range in age from 13 to 91, come from all walks of life, and almost unanimously agree (the complaint rate via letters runs less than 1/3 of 1%, and most of those eventually retract their misgivings) that the experience is the best thing that's ever happened to them in their entire lives, period. Pretty impressive.

The seminar was held in a large, attractive room of the El Rancho Tropicana in Santa Rosa. We were all given name-tags; those of the est graduates were prettier, fringed in sky-blue. Everyone seemed cheerful, bright-eyed and friendly, and even better looking than the general run of folks. As I headed up the center aisle to get a choice seat in the as yet sparsely filled auditorium, a man named Eldon ushered me to the side; for some mysterious reason the middle section would be available only after the end seats were filled. My friend, an est graduate, cavalierly ignored this directive and led me straight to my preferred destination. "They told me in the training I could do anything I wanted," she explained. Hmm. First Truth of the evening...

Helen, a tall woman in her late thirties, was the first to speak. Animated and beaming, she raved about how the est experience had

radically and profoundly improved her life. She complimented the audience, now 300 strong, for being such great people. She praised Sonoma County for being such a beautiful place. She had everybody stand up and shake hands with each other. Est, she said, had enabled her to become master of her life without even trying. For example, she used to have trouble making ends meet; now she never worried about money and always managed to balance her checkbook. Helen was a likable person, at least on stage, radiating happiness and good vibes. Not the kind of person with whom you'd discuss Descartes and Einstein over cappuccino, but airily pleasant. If I had to guess her occupation, I'd say she must've been a real estate agent at one time or another.

Next up was Roger, a handsome, square-jawed man, fortyish, well-dressed and self-assured. He looked

to get the desired things in life. Est is essentially an experience, not a belief system. It enables beliefs to blossom when they work, or allows us to shed them when they don't. In life, we either have what we want, or the reasons why we don't."

Always stressed was the "recontextualization" of the est training, wherein people experience the transformation of being at the effect of "things" to a context where they are the source-at cause-of "things."

Est is not a flake operation, and does not like being associated with the "cult" groups. The est Advisory Board, not all of whose members are est graduates, is composed of men and women who have distinguished themselves in the fields of law, medicine, government, science, business, the arts and entertainment. The U. S. Government awards est scholarships to prison inmates, and there is a move in Congress to make the training available to parolees. The Los Angeles police department has undergone est training. But there is dubiety. Est

"They told me in the training I could do anything I wanted," she explained.

like a Werner Erhard clone. The theme of the evening was "parents and children," and he got right down to it, asking members of the audience to share observations. "Parents and children never really understand each other," said one fellow. "I believe my son because I see myself in him," said another. Roger equated the experience of family as the beginning of the world working. "Most parents like to think they're 'safe harbors' for their children," he said. "But 'safe' means 'no consequences.' Kids would love to share their deepest feelings with their parents, but they fear the repercussions. Teenagers can't come home and confide what a beautiful sexual experience he or she has just had because all their lives, children have been conditioned to fear consequences from their parents. Real courage is not to say anything that is on your mind, but to listen." He said that, generally speaking, it is parents, not children, who are out of touch. Parents learn much more from their kids than vice-versa, and kids learn from the world around them.

Roger was a good speaker, magnetic and forceful, and often humorous. His lecture pendulated from the parent/children topic to why est is valuable, and back again in related cycle.

"Our beliefs are structured notions of people, things, events, etc. After the training, one can choose beliefs

claims that the transformation it offers isn't like "positive thinking," because it acknowledges the truth about life, accepting the ups with the downs; yet its unrelenting message seems to be that through accepting responsibility, you can experience life as being good even when it's "bad"—increased happiness is definitely the name of the game. And I rather resent being exhorted to take the training because it is undoubtedly the "greatest gift you could ever give yourself." The simplification disturbs me. It's like saying you can't fly because you don't think you can. If Werner Erhard is uniquely blessed with insights, how can his enhanced awareness be so easily communicated to less fortunate mortals? Or, if he's really just like you and me, surely the odds favor a happier world predicated on common revelation? After all, Christ was crucified 2,000 years ago and people are still killing in his name.

I confess to an inherent cynicism about life, and a natural tendency to resist being escorted from one state of mind to another, but I no longer summarily disdain human potential movements and spiritually enriching processes like est. Most of what was said at the guest seminar harmonizes substantively with my own feelings about life and its ramifications. Especially inspiring was Roger's impassioned finale, calling for an end to all the bullshit in the world, all the strife and war and alienation that result primarily from the individual pretense, or "acts," which are the erroneous methods for survival that we have all been conditioned to embrace since infancy. However, I am not ready to always manipulate my perceptions of circumstances so that imperfect conditions and the accompanying dissatisfaction will somehow be mitigated. Like the est people, I don't believe in self-deception or in using a crutch when you can walk, but the nature of life appears too complicated for any of us to have really figured out.

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Merry Band: Humor and Musicianship

Former co-founder of the '60s Incredible String Band and Scotsman, Robin Williamson and his Merry Band, will appear for one night only on Sunday, May 27, at the Inn, of the Beginning in Cotati. Show times are 8 and 10:30 p.m.

Though in no way an interpretation of existing traditional tunes, Robin Williamson's new acoustic music directly continues thousands of years heritage of songwriting and tune-making. They create a contemporary Celtic music using the old instruments (fiddle, string harp, button accordion, pennywhistle, guitar, mandola, among others) in a new way. The Merry Band combines humor with high musicianship and are full of respect for tradition, yet manage to blend musical forms and instruments of various centuries and cultures to create what is internationally being recognized as a unique and innovative "fusion music."



Contraband Shakes 'em Up at the Boarding House

The Contraband made another smash appearance on April 29 at the Boarding House in San Francisco, opening for Roy Loney and the Phantom Movers.

The evening consisted of two sets apiece for the bands, but that didn't deter Dan Christy and the other members of Contraband from putting all they had into their music. And I must say I respected the band for not playing duplicate sets, as a lot of opening acts (and even headlining acts) do. Only one or two songs were the same in the second set as in the first.

Perhaps part of the reason Contraband sounded so excellent could be the fact they were recording a new single. In approximately 3-4 months it should be out, and will probably feature a live version of "Twist and Shout." Their second single, which contains "In The Night" and "Searching for Affection," came out less than a month ago on their own private label, Louder Faster Records.

For a relatively new band to the scene, I really have to admire their professionalism. One thing they do which is really a nice touch is place the drummer, Marc Randall, to the side of the stage instead of hiding him behind the other band members, as is usually the case. This enables the audience to see the drummer and also gives the guitarists plenty of space to move around -- and move around they did! Lead guitarist and vocalist Dan Christy crouched, kneeled, leaped and bounded his way through the sets, at times throwing his guitar behind his back to grasp the microphone better to sing. With his wide red tie, earring flashing, and characteristic chain guitar strap, Christy sang and played like a budding George Thorogood -- only more original!

John "Maddog" Baumann played his keys like he'd been doing so all his life, and during one particularly hot number even jumped over the top of the keyboard and flew to a mike like one possessed to sing a great lead vocal and get in front for a song.

An eerie space-like intro was coolly pulled off by

Michael Stone on his Fender jazz bass during the song "Tears for Two."



Contraband's Dan Christy: "I want to keep writing songs everybody's mom and dad will hate."

The Contraband plays a very musical, intellectual sort of rock'n'roll with the punch still intact, and I must encourage every lover of rock'n'roll music to see this band at first opportunity. They truly have a lot of potential!

Which I'm afraid was not the case with the act to follow, Roy Loney and the Phantom Movers. Singer Loney strutted and quacked his way through songs not unlike an impression of Donald Duck, and the three drums and three cymbals seemed to be too much for the poor drummer. The set consisted of a mixture of songs including Elvis Presley's "Return to Sender." One highlight was "If You Ain't Gettin' Out" which had that "punkabilly" sound coined by the Cramps of New York.

Apparently some members of Phantom Movers were once part of that great S. F. band, the Flamin' Groovies. If it wasn't for that claim to fame, they'd probably be playing to empty halls.

Lou Reed

On May 9 some friends and I witnessed one of the all-time rock greats, Lou Reed. He opened the sold-out show at the Old Waldorf about an hour late, with the classic tune, "Sweet Jane."

Lou played for almost two hours, making it worth the wait! There were no opening acts that night, but the crowd didn't care; we were there for Lou. And he didn't let us down.

After "Sweet Jane" was "Waiting For My Man," followed by "Little Queenie," the duration of which a cigarette danced, stuck into the strings near the pegs of Reed's guitar. The guitar strap itself read in fancy white outlined block letters "ANIMAL," for a rock'n'roll animal, that is.

A set solo highlighted "Walk on the Wild Side," and after the applause died down we could hear cries for requests ranging from "Coney Island Baby" and "Rock'n' Roll" to even "Over the Rainbow!" But Reed didn't deviate from the songs he had planned, which featured a lot of oldies.

The sax man demonstrated his talents as flutist during a beautiful rendition of "Perfect Day," the band sounding very jazzy throughout the chorus of "You're Going To Reap Just What You Sow."

Lou began what many think of as his theme song, "Heroin," by playing a solo under red and blue lights. Gradually the band joined in, and the song picked up tempo and melted into a medley of "Tracks of My Tears" and "Shake It Up" before returning to "Heroin."

Continually smoking cigarettes, Lou played "Bad Luck" off his newest album as his last song, and held the audience at bay while they cheered, clapped, and stomped for an encore. For awhile it seemed as if Lou wasn't coming back out, but finally he reappeared to do some rather unexpected encores, including the old song "Pale Blue Eyes" off the third Velvet Underground album and "I'll Be Your Mirror," which is also an oldie I hear Lou hasn't played on stage for quite some time. The final song was "The Bells," title track from the latest LP.